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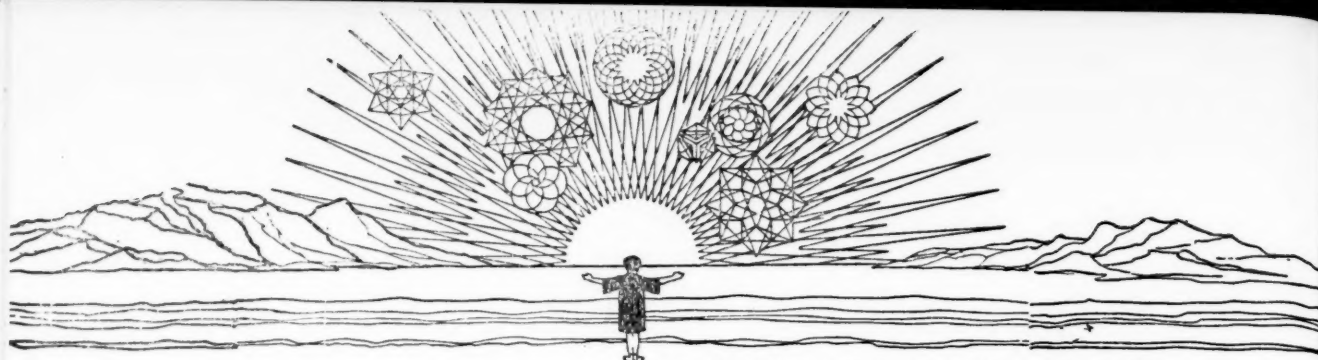
IN MODERN THOUGHT

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MAIN CURRENTS IN MODERN THOUGHT

A cooperative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.

CONTENTS

The Ethics of the Kural	Henry B. Thiagaraj	27
What Good is God?	Wendell Thomas	31
Freedom Framed by Law	Orris F. Krumboltz	35
Religion in the Public Schools	J. D. McAulay	38
Source Readings:		
Stellar Study and Speculation		41
Plant-Life on Mars		41
Food for Thought		42
Speed Words		43
News and Notes		44
Reviews:		
The Phenomenon of Man, By Pierre Teilhard de Chardin		46
Metascientific Queries, by Mario Bunge		47
Introduction to the Theory of Quantized Fields, by N. N. Bogoliulov and D. V. Shirkov		48

On the cover: Chidambaram: Famous and ancient South Indian temple dedicated to Nataraj, in the center of Tamilnad.

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and contemporary views of Eastern, European
and American thinkers. It is designed to save time for
the reader by providing a vantage-ground from which the
whole world of knowledge may be surveyed and kept in
proportion as it moves toward integration. Its editors
assume that the principles of art, the universals of philosophy,
the laws of Nature and Man as formulated by science,
and the truths of comparative religion, can be orchestrated
into a harmonic, meaningful, ethical body of teachings
which can and should be made the central core of curricular
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THE ETHICS OF THE KURAL

Henry D. Thiagaraj

ALBERT Schweitzer, in his examination of Indian thought and its development, commends the *Kural* for drawing with sure strokes the ideal of simple, ethical humanity. He says, "There hardly exists in the literature of the world a collection of maxims in which we find so much of lofty wisdom."¹ *Kural* is the short or popular form of the full name, *Thiru Kural*, which is, literally, "sacred couplets." Its maxims are written in distich form; 1330 in all. Thiru Valluvar, the weaver of these aphorisms, was a sage who had deep insight into human problems, and a poet with the great gift of expressing universal truths in short and pungent aphorisms. Such is the wisdom and clarity of thought of Valluvar that the modern Tamil poet, Barathi, has been impelled to say of him, "By the birth of Valluvar, the Tamil land got everlasting fame."²

The *Kural* is known as the Bible of the Tamil people, who have inhabited the southeastern part of the Indian peninsula from most ancient times, an area now known as the State of Madras or Tamil Nad. The Tamil language, which is still spoken, is of Dravidian or pre-Aryan origin, and is wholly distinctive. The culture of these people was at one time completely independent of Northern influence, and has even today not been fully assimilated.

The *Kural* itself is the expression of some 2,000 years of Tamil culture, and the embodiment of its ethos. There are several theories regarding its origin. Some authorities say that it belongs to the period in history when the need to resist alien philosophies of life was deeply felt; these place it after Buddha but before Christ, when the Dravidian people were being invaded culturally and politically by the Vedic-Aryans. Other scholars think that it was written in the pre-Vedic period but subsequently re-written. Still others are of the opinion that it was written after Christ, and that Valluvar may have been influenced by the first apostle of Christianity to visit India, St. Thomas. This last, however, is a very debatable theory indeed.

¹ Albert Schweitzer: *Indian Thought and its Development*, p. 203

² Barathi: *The Song of the Tamil Nad*

The Individual and Society:

an Ancient Tamil Prescription for Their Successful Integration

The *Kural*, whatever its origin, has undoubtedly influenced many minds, both past and present. Tamil renaissance and reform movements in the twentieth century have been actually a return to the basic teachings of the *Kural*, which has been a source of inspiration to many modern Tamil leaders. As a result of this upsurge of interest in the ancient book, it is now being taught in schools of the district, and its verses are being committed to memory by Tamil children of all ages.³

The *Kural* is a poetic expression of the highest ethic. It does not contain a religio-ethical code, however, but is rather a humanistic system of thought which penetrates the reality of experience. It deals with the problems of man which are met in daily life, in terms of an ethic which has eternal and universal value. It explores the basis of human conduct, and the relationship of man to himself and to the world. No matter what aspect of human life is under consideration, the *Kural* has always something to say which is noble, significant, and full of good sense. And at the same time, it is full of the joy of living and the value of right human relationships, wherein noble ideals may be realized and practised as the good life. For all these reasons, and more, the *Kural* is unique.

For the Tamils, life has always been characterized by two aspects: *Agam*, or home, which concerns the realities of individual and personal love, and *Puram*, which has to do with the relationship of the individual to society. The most ancient Tamil literature embodies these two categories, but the *Kural* harmonizes and unifies them into a single ethical system.

According to the Hindu tradition, life has four primary values: *Artha*, which is practical, *Kama*, which is sensuous, *Dharma*, which is moral, and *Moksha*, which is liberating or religious. The *Kural*, however, follows another tradition, one that is distinctly an expression of Tamil culture. The content of ethics is ordered differently: first comes Virtue, second Wealth or Wisdom, and third Love. These three primary qualities or val-

³ The most complete English version of the *Kural* was made by the European missionary, G. U. Pope.

ues are all that are considered; the fourth, *Moksha* or liberation, is ignored. It is reasoned that if Virtue, Wisdom and Love are rightly realized in this world, in the here-and-now of human experience, this in itself constitutes the summation of existence. The author reflects the thought that the basic acceptance of goodness will lead to right ways of living, and that this in turn will lead to joy, love and peace. Thus the *Kural* may be said to embody a contrary emphasis to the Vedic-Aryan philosophy, for its values are rooted in the affirmation of life and its reality. It is not supra-ethical, but ethics itself.

The *Kural* is concerned with the three aspects of the human personality: willing, knowing and feeling. Its greatness lies in the ways it unifies these, and shows life whole and integrated.

"VIRTUE" is the subject of the first portion of the book, covering the wide range of activity of the human will. It opens with homage to the Supreme Being from whom all values of life originate. Its very first verse says: "A is the first of the alphabet, so is the Primal Being first of the Universe." The *Kural* is not a theoretical metaphysical system; it contains no religious dogma. Yet, like Kant, it postulates freedom of will, immortality of the soul, and the existence of God as Prime Mover or First Cause. This concept of God is the moral Governor of the universe, in whom all values subsist, is perfectly consistent with its system, which is held to be the moral proof for the existence of God. From one point of view, Valluvar's morality might even be said to be practical metaphysics, since it bases the cosmic ground for ethical activity in the ultimate principle of the world. The universe of the *Kural* is an orderly and ethical universe. But it is the practical reason for moral experience, not theory or intellectual speculation, which is the chief concern.

Thus freedom of will compels one to strive for the good, through ethical activity that brings victory in the struggle. Freedom of will reconciles virtue with the natural determinism of life, so that both can become tools with which the enlightened man can work to overcome life's difficulties. The third postulate, immortality of the soul, is self-evident, since the cycle of seven births is given explicit reference. Its argument for the immortality that accompanies the theory of reincarnation seems to prove the author's strong belief. It has been observed⁴ that through a syncretist formula the Vedic-Aryans adopted the idea of reincarnation and karma from the native aboriginals of India. If this is so, it is quite likely that the ancient Dravidians had the idea of reincarnation which

is associated with the power of cosmic justice. This we find in the *Kural*, but the escape from reincarnation through *moksha*, or emancipation of the self, is not taught.

Added to the argument for God's existence, we find that "Swimming in the Ocean of Birth is difficult, if one does not go to the feet of God who is the Ocean of the Virtues." All men find it difficult to swim in this ocean-like life without help; the *Kural* gives cosmic support for individual ethical action through the inspiration and power of God, the source of all values. The Hebrews sing with the same idea, as the Psalmist inspired them, in the verse: "The God of Israel is He that giveth strength and power unto His people." So also did Jesus teach men to pray to God to "... deliver us from Evil; for Thine is the Kingdom and the Power." It is natural for man to seek a power beyond his own to help and inspire him, and the *Kural* offers the strength of such support. But the nature of God is not described; He exists as a postulate from which is derived a structure of values that can be known only through the experience of ethical practice.

The enigma of virtue is solved by a simple definition: "Virtue is the guiltlessness of the Mind," with the further qualification, "Virtue is not yielding to Envy, Lust, Wrath, and Bitter Words."

That the virtuous life can best be realized in a family environment is made clear in a parable related of Valluvar's life. It is said that a man once approached Valluvar and asked whether it is best to marry and raise a family, or to become a hermit and retire from the world. The reply was a demonstration: Valluvar called his wife, Vasuki, who was drawing water at the well. At his summons, she left the water jar hanging and hurried home. Later at breakfast, when he was eating the cold rice left over from supper, as is a Tamil custom, he complained that it was hot. Vasuki at once brought a fan to cool it. At noon, he let something fall, and called for a light to see it by. She straightaway brought a lamp. Thereupon the inquirer exclaimed, "I have the answer! If a man can get such an excellent woman as his partner in life, the practice of domestic life is laudable; otherwise it is better to become a hermit."

THE *Kural* encourages home life, where virtue can result in action. This recommendation is related to a larger concept: The whole world is the home of humanity, and each individual is a member of the family of man; this truth can best be realized by living among one's fellows and loving and caring for them in a spirit of brotherhood. This concept of the ideal life becomes a reality in the close associations of everyday experience. It

⁴ See *Reincarnation and Karma*, by Hogg, published by the Christian Literature Soc, Madras.

is only when a man has been able to find love in his family life and to practice virtue in the ethical activities which spring from such love that he will be able to feel the strength of his relationship with all mankind. Thus the *Kural* gives reality to the Tamil proverb, "Every man is our kinsman, every city is our native city."

Of love, in the general sense of sharing life with others, in goodwill and understanding, the *Kural* speaks: "Those who love belong to others, but the loveless take other's belongings." And again, "The life of the loveless is like the sprouting of a dried-up tree on a desert." Over and over the emphasis is upon the uniqueness and beauty of life, which none should abuse or negate. As the most basic of our positive values, it should be cherished and glorified by the action of love. Love thus becomes the mature way of life, the summum bonum of social as well as of personal and family life. Valluvar's concept of love is dynamic, and it results in a vivid and humanistic ethics in which, through personal sharing of life, the individual may in time come to embrace the whole world. Thus, in the ethics of the *Kural*, love transcends the willing, knowing and feeling aspects of man, and inspires the ethics by means of which they are kept in a state of equilibrium. Volition, cognition and emotion then balance and supplement one another, and the result is a fullness of life.

Asceticism is not appreciated in the *Kural*, and the implication is that it is basically a selfish act to withdraw from the world. Sannyasis who leave their homes for the forest are treated sarcastically, with the remark that shaving the head or growing a beard as a sign of renunciation is useless; only by renouncing lust and envy in the heart can freedom be won. The lower aspects of the personality fade away through the practice of love, whereby the higher nature is strengthened and transcends the lower. Those qualities and habits which degenerate human life to the instinctive level are dominant only because man has not yet gained the knowledge that they can be overcome. The instincts themselves can be used to elevate human nature, once they are irradiated by love. Thus life that is fulfilled in the ethical activity of love is truly sacrificial, for concern for the welfare of others becomes a first object, and self-denial becomes a natural act in the pursuit of the good life. For ethical love implies a giving of oneself, without reservation. Thus life in the world is full of meaning and value; the *Kural* finds that it is enough for man to seek out and fulfill these meanings, and it does not attempt to go further.

Non-violence is taught as an important means to achieve the higher life. The *Kural* says, "The highest wisdom is not to return any harm to those who harm you." Negative values like non-anger, non-enviousness, non-covetousness, and so on, are given equal prominence with positive virtues like

discipline, honesty, giving and gratitude.

The rewards of good action are given place in the *Kural*, but it goes further. "For a kindness done without expecting a reward, can heaven and earth be adequate compensation?" True liberality is pictured as being like great clouds that pour down their rain in abundance, expecting nothing in return. Inward purity should express itself naturally in outward action, as the tree is known by its fruits; the roots of life are fed by inner motives to the good, and are unspoiled by desire. The *Kural's* teaching in this respect is very similar to the Nishkamakarma doctrine of the Gita: to do good is our action, its fruit is not our concern. The *Kural* emphasizes that rewards are not to be sought in heaven either, for, "Even if there is no higher world, still it is good to give."

THE second, and major division of the book is concerned with wisdom, here called "Wealth." The knowing faculty of man is carefully considered, and wealth, or acquired wisdom, is portrayed in its material as well as its spiritual aspects. The virtuous man is described as gaining knowledge to maintain the life which he has dedicated to higher values. In this process, error, knowledge and perception are all encountered. These are not treated epistemologically, but as value-concepts. Intelligence is concerned with action; it prompts one to make right decisions. By pointing out the disastrous results of illiteracy and social evils, the *Kural* emphasizes the importance of agriculture, citizenship, education, economics, human relations, medicine and political science as the means to a better life for all.

The *Kural* concerns itself extensively with state, society and government. Valluvar was a prophet who applied ethics to politics, by providing a practical and valid ethical basis for government. Although monarchy was the dominant method in his time, he urges democracy under the guise of monarchy, and says that a good king must seek the opinions of others. For, "vain is the kingdom where good things may exist but no love between the ruler and the ruled." The *Kural* considers all the details of politics, and prescribes the necessary qualifications for an ambassador; it defines diplomacy, administration, defense, foreign relations with allies and with enemies, justice, and so on. Like Plato's king-philosophers, the *Kural's* rulers are mature in wisdom, astute in government, thoughtful of their people's welfare, and respectful of individual rights and privileges. Education is stressed as an eternal value, for "One should learn without error and should follow what he has learned." Theory and practice are synthesized, since performance should and must follow knowledge. The result of such an education is service to society.

THE third part of the book deals with Love, as the necessary fulfillment of Virtue and Wisdom. As the will to the good leads to the knowledge requisite to the pursuit of the good life, so follows the emotional experience of living that life. The *Kural* sings of the beauties of earthly love, and it would be an injustice to the book to attempt to interpret this only as depicting the mystical relationship between the soul and God. The book is straightforward: the love of one human for another is described as an end in itself. But since earthly love is a strong wine, whose very thought intoxicates, one must be careful in its practice, and that is why virtue and wisdom are prerequisites. This portion of the *Kural* describes clearly the emotional experience of sexual love, and considers in detail the obligations and rights of marriage, and the relationship between husband and wife. Thus a living ethic for a happy married life has long been established in South India. Commenting on this, A. L. Basham says: "Early Tamil literature, more popular in character than that of the Aryan North, makes many references to the free association of young men and women."⁵ The *Kural* harmoniously reconciles the free play of love and the virtue of chastity in the practical relationships of a people who have accepted the importance of family life as an ethical value. The *Kural* views man as a whole being, wherein there is an organic relationship of body and mind, a fusion of physical and psychological, material and spiritual, emotional and rational elements. Thus the chastity of pure love is the virtue of the *Kural*.

For this reason, womanhood is exalted in this moral philosophy, for woman has more responsibility in practising the virtue of chaste love. Moreover, it is through her influence that man's ethical convictions are strengthened and his actions pointed in the right direction. The *Kural* never fails to emphasize the mutual responsibilities of man and woman. But woman, especially as mother, can best express that compassionate love which is capable of sacrifice and suffering for others, and which is the most complete embodiment of the chastity of universal love. This kind of love can never be won merely through adherence to rules of conduct or custom. It is rather an inner realization, a spontaneous response to human needs, and a necessary human experience.

One of the most important tasks in woman's life is of course the rearing of children—that new generation which will remake the world. Through love and right relationship between mother and child, ethical values become instilled gently and truly, and a compassionate way of life is entered upon naturally in youth. So the *Kural* says of a woman as mother, "She delights more when she

hears that her son is well-conducted than when she gave birth to him."

SINCE the *Kural* and its ethics reflect so vividly the life and thought of the ancient Tamils, it is a matter for sad concern that in South India today much of the ancient teaching has been forgotten, and social evils have crept into the fabric of life. Before the cultural and political invasion of South India by the Vedic-Aryans, caste was unknown. As A. L. Basham says, "Varna came to the Dravidian South comparatively late, for the earliest Tamil literature shows a society divided into tribal groups with little sense of precedence of one over the other."⁶ Whatever may be the explanation for the gradual loss of a basic reliance upon values, it is evident that when through the years blind adherence to tradition, narrow-minded orthodoxy, rigid customs and irrational forces result in suppression of the spontaneous realization of ethical values in life, social evils do appear.

What is needed today is that society throw off its taboos, religious superstitions and dogmas, and rigid traditions of morality, in order to recreate a free ethical society where love and the other values of virtue may once more prevail. For these traditional influences are static and confining to the human spirit, and thus opposed to the good life, which is dynamic. They rob the individual of his freedom to exercise choice, to take responsibility, and to realize in action the ideals which elevate men and create a beneficent social order. In this, the *Kural* is of great help, for it emphasizes the dignity of life and the significance and value of human personality. It establishes the basis for an ethical society created by the free participation of thoughtful, virtuous men. Since life is full of value and meaning, education, economics, politics, religion, art, and all related activities of man should be weighed and judged according to the degree in which they express these fundamental moral values. In the ethics of the *Kural*, it is only by courageously accepting the challenges of life both individual and social, that one can win through to peace, wisdom and love.

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⁵ A. L. Basham: *The Wonder That Was India*.

⁶ Ibid

WHAT GOOD IS GOD?

Wendell Thomas

A Suggestion that Cultural Unity May After All Be Found in a Concept of Deity

THIS title, as it stands, is childish and vague. It is a contraction, however, of one of the most important questions that can be asked in the twentieth century: "Of what good, or positive value, is the term *God* for the modern man?"

Let us first take care of semantics. By the term *God* the writer means what was signified (or pointed toward) by the word *Elohim* when a *Genesis* writer composed the Hebrew equivalent of, "In the beginning God created the heavens and the earth," by the word *Pater* in *John* 10:30 where we find Jesus speaking the equivalent of, "I and the Father are one"; and by the word *God* when the writer as a boy in a Methodist Sunday School studied the command of Jesus, found in the Gospels as well as in *Deuteronomy* 6:4: "You shall love the Lord your God with all your heart, and with all your soul, and with all your might."

It may be objected that what was meant by the term *God* in these three writings was not precisely the same. The words, terms, or concepts are indeed not precisely the same; but *what is meant* (or pointed toward) may well be common to all. The same thing may be viewed through different windows or spectacles, or from a different standpoint. It is in this fairly well recognized sense that the writer uses here the term *God*.

At this point the reader, now impatient, may say to the writer, "Since the term *God*, to you, is the familiar old concept found in the Bible, I will answer your question briefly: the term *God* has no positive value for the modern man. It has indeed some historical value in showing what people believed before science took over. But the modern man as a scientific thinker can no longer believe in the supernatural. The age of dualism between a natural world and a supernatural God is past. If we must in the twentieth century believe in something, let us believe in Nature, not God."

To this possible challenge the writer must reply that the concepts of God found in that library of sixty-six books known as the Bible are not always supernaturalistic or otherwise dualistic. In *Psalms* 90, for example, we read: "Lord, thou hast been our dwelling place in all generations."

There are many and various God-concepts found in the Bible and in churches—animistic, henotheistic, anthropomorphic, and naturalistic. The Jewish-Christian tradition has had a checkered career. The religion of Jesus degenerated in the hands of his disciples and their followers into sect, dualism, dogmatism, bigotry, and imperialism. It has also gone through revivals, but has seldom recovered as yet the soundness of Jesus' religion.

Jesus himself was, of course, not an Einstein. But his concept of God will be found, on inspection, not unfit for twentieth-century science. Jesus worshipped the creator, ruler, and judge of the world, the one who does everything that is done, knows all that is known, and works everywhere through creatures, including the human. There is no supernaturalism here; on the contrary, Jesus stressed the natural working of God on earth and through human bodies here and now. Jesus, of course, used his people's extravagant, metaphorical speech which to our prosaic modern ears may at times sound supernaturalistic; but his moral selection and emphasis was invariably naturalistic.

If the main current of Jesus' religion had flowed, not through the dualism of Paul and Platonism, but through the monism of thinkers like Anaximander (scientific philosopher of the sixth century B. C.), the Vedantists of India, John Scotus Eriugena (Irish bishop of the ninth century), and of philosophers influenced by field theory and relativity, the dominant concept of God would now probably be openly scientific.

The reader may still be unconvinced that the term *God* has any positive value today. "Granted that Jesus' concept of God *can* have a scientific or naturalistic interpretation," he may say, "what is the use of now introducing confusion into a dominantly supernaturalistic tradition? Why not simply use the term *Nature* to replace the defective or confusing term *God*?"

The writer has no objection to *Nature* (active or indivisible nature—"natura naturans") as a term for reality, nor to the *Self* (the common or cosmic self), nor to the *Good* (universal or final good). But each of these terms suggests a different *special aspect or perspective* of reality: one, the

physical; another, the psychological; and the other, the ethical. So none of these three admissible terms seems to be adequate in itself.

Nature is a grand term. It means that one is confident of unity in the field of natural science, including physics, biology, and possibly sociology. Likewise, the *Self* (or Soul) is a grand term. It means that one is confident of finding a psychological unity underlying mind and body, the individual organism, society, and the natural environment. The *Good* is also a grand term. It means that the values of all plants and animals, of man and civilization, custom and rebellion, law and invention, right and private conscience, can be unified in a hierarchy of values expressing one ultimate or final value. What term, now, is to unify and include the three distinct terms, *Nature*, the *Self*, and the *Good*?

The Vedantists of the monistic school have already recognized a unity of these three terms in their profound identification of *Brahman* (material nature) with *Atman* (active self or soul), and *Anandam* (universal or final good). They have also a single tri-partite term, *sat-cit-anandam*, that conveys something like this identification. But even "non-dualistic" *Vedanta* will be found, on examination, to be infected by dualism; and each term or part of *sat-cit-anandam* needs to be scrutinized for possible revision by a modern thinker. When sound unity is achieved, what term shall be used to express it? *Dev*? "The One"? *Theos*? "Cos"?

The term *God* has the advantage of having already stood, in the work of thinkers like Jesus, St. Francis, and Gandhi, for cultural unity. In any case, let us first attempt a comprehensive cultural unification from a twentieth-century standpoint. Then let us see what pragmatic or educational value the historic term *God* may have in promoting sound culture — unitive but not uniform—throughout the world.

* * *

THE growing child progressively responds (1) to the contacts, demands, obligations, laws, and opportunities of his social environment; (2) to his own feelings, desires, frustrations, hopes, habits, mistakes, disappointments, achievements, etc.; and (3) to the natural environment of the human group including himself—to flora and fauna, to earth, water, atmosphere and the starry heavens. These three fields are not separate compartments, but three aspects of one life. If we deal with them one after another it will be only to see eventually how they are really one universe culminating in one inclusive rich concept.

First, the natural world. The law of evolution, with special attention to the emergence of life and of man, together with atomic research and

speculation on space and time, has shown us more and more clearly the uniformity as well as the diversity of the natural world. Every bodily form of Nature is a more or less complex *organism*. As Whitehead says, physics is the science of minute organisms; biology, the science of larger ones. Since the minute organisms must ordinarily be dealt with *en masse*, the standard methods of physics are cruder and more statistical than those of biology and sociology; but the subject-matter is, at bottom, the same.

The great new conception in physics brought about by Maxwell, Einstein, de Broglie, Heisenberg, and others, is that organisms move about and evolve not as independent bodies in "empty space," as in the familiar mechanistic view from the time of Democritus through the Newtonians, but as wave-forms of a boundless active real space "possessing both mathematical and physical properties."

This is not to deny that bodies are actual, or to affirm them to be nothing but mathematical formulae or mental objects. It is to affirm that every body, from the electron through the human organism and out to the largest star is substantial indivisible (or individual) space in a certain form.

In sum, Nature is real space, and natural evolution is this eternal space progressively "expressing," or actualizing, itself through endless time. Nothing but form is ever created—a form of material substance, of course—and every creation is a *limitation of*, not an addition to, the boundless spatial creator.

This view was available back in the twenties, but it will probably take a long time, alas, for it to become recognized in our philosophy and culture.

Second, the psychological field. The work of the Gestalt school is compatible with emergent evolution and the new physics of space-time; for the *gestalt* is a dynamic or evolutionary space-time configuration, an organism, an "event."

And the "new view of man," which Ira Progoff affirms to be an emergent of the "depth psychology" of Freud, Adler, Jung, and Rank, has much in common with both *Vedanta* psychology and the new physics of space-time.

The self, or soul, is no longer to be regarded as an immaterial something, as in Introspectionism, or as a meaningless archaic term, as in behaviorism. The self now may represent, in Progoff's words, "the infinite depth and magnitude of the human personality; and at its furthest reaches it touches the deepest ground of Being where man experiences the 'boundlessness of soul' as an evident fact."

It is clear that this boundless soul is just a psychological perspective of what the new physics conceives as boundless indivisible (or individual)

space. The cosmos with all its bodies, including the human, is an actualization of the boundless soul through the soul's own activity, spirit, time-process, or evolution.

Man is this soul in human, or community, form. You and I are this soul limited to, or expressed in, our interpenetrating social and natural worlds, each centering in a private human body, yours or mine. There is no wall between us. We are the same substance in two transacting organic forms.

In the light of space-time physics we can assign clear meanings to many obscure psychological terms. Take "consciousness," for example. Let us start with *time* which, in the new physics, must be spatial. Time is simply the activity, directional movement, or evolutionary expression of space, of eternity. It seems fitting and helpful to define the *past* as body, the *future*, as field and the *present* as the stirring, exciting, and unpredictable transaction between body and field. Then the smooth functioning of the body may be called the "unconscious," while the present transaction between field and body holds consciousness, which may be defined, perhaps, as the soul's *cerebral* transaction, while the "subconscious" may then be called the soul's *non-cerebral* transaction or present activity.

Take the "mind," as another example of an obscure psychological term. Since the time of Descartes there has been confusion in Western thought between "mind" and "soul." Space-time physics helps us to clear up this confusion. Let us start with the soul as active real space. Mind is not active, not a substance. It is an intellectual or rational *field*, and yet a form of material space, in our monistic view. Currents and wave-trains of time in space make a moving pattern, a ceaselessly changing *gestalt* of space-time events. Mind is the motionless immaterial field of "point-instants" in which these material space-time events intersect. Knowledge, especially exact, or measuring, knowledge, takes place through this field or framework or somewhat Kantian screen of the mind.

Your mind is the field of point-instants centering in your body as its "frame of reference." Your mind and mine and the other fellow's can interpenetrate and form, on occasion, a group mind which, however, is not an agent but merely a coordinating immaterial field for group action.

What psychologists in the past have usually spoken of as "the mind" is what the new psychology should regard as the *person*, or "personality," as the finite self or conditioned soul, the common soul expressed through, or limited to, your body or mine. The person, of course, is social and natural, since the living human body is always the center of a social and natural world in which human problems and solutions, defeats and victories occur.

Third, the field of ethics. If physics and psychology can be recognized as having the same subject-matter—namely, the cosmic individual—then the most vexing problem in current ethics—that of the "individual" *versus* the state—is open to solution. Jay William Hudson has indicated the shift of ethical theory and practice in the United States during the past few generations "from the notion of right for right's sake to right as a means to an end; from a code of rules to be obeyed to a goal to be achieved." This goal, or good, he points out, is usually regarded as total "self-realization."

Yet there is also a "recognition of the social nature and the social obligations of the individual" together with an "emphasis upon the political and economic orders." Which, then, is primary: the individual human being, or politico-economic society? Should the "individual" serve the state, or should the state serve the "individual"?

When Aristotle was confronted with this ethical question, he replied that man was a political animal who could realize his true self only in the state; but that the state, in turn, should aim to produce good citizens. If the "individual" is merely a citizen, it would seem that the state is the end; but if his "self-realization" lies even partly outside the state, then obviously the state is not final. Many democratic thinkers assert that the "individual" is the end, while admitting that a lawless or violent "individual" may properly be controlled by the state.

Apparently there is no solution to this important problem of civilization if we presuppose that the individual is the particular human being. But if the individual be regarded as the boundless material soul, it must then be considered the final value which both the human organism and the state may be expected to serve. Thus the state is decidedly not the end, but a means; nor is the human organism the end. Each human being should be controlled, through the *limited* and *federated* (not imperialistic) state, by and for the individual, self, or soul expressed in all human beings and their surrounding natural world.

This soul is man's common good whose "realization," or expression, is the moral life. While the relation between the human organism and the state organization is a problem, it is now neither obscure nor insoluble. The relation is simply that of one *gestalt* to another—of a more close-knit dynamical pattern to one that is less close-knit but more extensive.

One of the great problems of ethics is that of freedom. This is a double problem: theoretical and practical. In view of the world's structure, is individual freedom possible? If so, how can it best be achieved in the world of today?

From the standpoint of Newtonian mechanism freedom, of course, had no chance. But in the new physics freedom is patent. Transacting bodies

may indeed determine one another; but the substance of which all bodies are created forms—namely, our boundless, indivisible, creative soul—is free precisely because it *is* creative, indivisible, and boundless.

The individual is free because the individual is essentially the soul which has no external bounds or compulsions. It is limited internally, of course, and these limitations or internal conditions must be taken into account in any free or creative action.

Freedom is expressed chiefly in the *present*, the locus of Heisenberg's principle of indeterminacy, and especially through consciousness; but space or soul as such *is* freedom, a continuous indivisible freedom flecked with created conditions of further creation.

The main problem of freedom today is not theoretical but practical. How can the cosmic self achieve on earth maximum freedom—a freedom of all persons, not just a few—when imperialism, power-politics, and economic exploitation are in the saddle?

The answer of pioneer thinkers such as Vinoba Bhave of India is that more attention must be paid to conserving and appreciating the natural world and to developing the local or residential community with all that this implies in population control, fair distribution of land, and mutual service in labor-exchange.

* * *

WE have entertained the assumption that physics, psychology, and ethics can deal with the

same subject-matter, or reality, from different points of view but with compatible interests. We might well call this one subject-matter, or reality, *God* if we feel that Jesus' religion still has a wide appeal and educational possibilities. For to Jesus God was the all-powerful creator describable in the twentieth century as boundless creative space. To Jesus God was also the cosmic self enunciating the law of life directly through Jesus and his disciples and others in such words as, "Your sins are forgiven . . . Take up your bed and walk . . . I say to you, Love your enemies." To Jesus, finally, God was the great good which was served and enjoyed through any good act, and most fully in promoting the "kingdom of God," which we can understand as the actualization in time of the eternal divine self.

The concept of God's kingdom, which was the message of Jesus, is unfortunately not well understood by the church in general. It was Jesus' selective organization of Jewish cultural ideals. It included appreciation and renewal of the natural world, genuine community living, a fair distribution of land, and widespread mutual service. It involved respect for law, together with a liberal, critical, and constructive attitude toward this instrument of social control that illumined every field of community life. To Jesus God was the source of culture; and the chief religious vehicle was neither the synagogue nor the temple but the federated community of life and work.

If we are looking for unity in a world-wide creative culture, that unity, it seems, may be found in the concept of God held by Jesus and recognizable through contemporary physics, psychology, and ethics.

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FREEDOM FRAMED BY LAW

Orris F. Krumboltz

WITHOUT question the most significant human activities of the mid-twentieth century bear directly on the struggle of the free world to establish its values on a permanent basis, and to gain for them worldwide assent. The major obstacle to this aspiration is, of course, communism and the active propagation of communist ideology in uncommitted areas. The major advances which Soviet technology has made in the past few months have sharpened the issues and demonstrated to the American people that their own general economic and technical superiority has become something not to be taken for granted but rather to be cherished and actively cultivated.

For these reasons many Americans are emphasizing the need for reassessing our strengths and weaknesses in a thoroughly realistic way, not merely for the immediate purpose of competing successfully with Russia, but for the long range goals of greater productivity, technological advance, material prosperity, economic stability and security. For many, all this seems to turn upon our ability to pursue scientific development with speed and success, so as to keep level if not ahead of the Russians. But of course the larger issues which are involved in what we think of as our way of life are still more complex, and bear upon our ethics and our philosophy as well as upon our science.

It is a fact, not taken seriously enough, that in the communist nations scientific and political philosophies are in agreement, both acting to suppress freedom. In the non-communist world, however, they are in disagreement, since we favor freedom yet generally accept a scientific philosophy which is deterministic and opposed to freedom. This causes the strengths of these nations to be dissipated in conflicting actions. We in the free world have felt that we can win over the communists in spite of this conflict. But we must note that we are laboring with a serious handicap which must be eliminated or reduced as much as possible if we are to have a reasonable chance to win the ideological battle with communism.

One of the reasons for our present plight has been our attitude on questions relating to science. We have become so accustomed to see science emerge triumphant in all respects that when

A Discussion of the Scientific Evidence Which Bears on an Urgent Problem

some one in authority makes an all-inclusive scientific statement we often do not bother questioning it even though very little effort would show the truth or falsity of the statement.

All through the history of man's progress in science there has been a tendency for him to accept a naturalistic or mechanistic explanation of himself and his surroundings. This belief was presented to us by the Greeks from the pre-Christian era. It has been advocated by many writers since that time, the most notable being Laplace who developed it extensively. It was made even more convincing by the developments of modern science. Every event was linked to preceding events by inevitable connections in science. Chance was held to be replaced by necessary connections, and actions of men were believed to be determined solely by their antecedents. Free will yielded to the onslaught of science.

As a consequence of these tendencies, libertarians, as well as mechanistic scientists, have concluded, without a sufficiently thorough consideration of the fact, that scientific law must necessarily be dominant over concepts involving freedom. Libertarians have looked for places to apply concepts of freedom where scientific laws seem slightly incomplete or ill-defined.

Mechanistic scientists have followed and libertarians have accepted, without question, the general scientific principle advanced by Laplace covering mechanistic behavior of material systems. This is correct in regard to general behavior of material systems but it led to serious errors as applied by extreme mechanistic science.

All material bodies are, of course, under the law of universal gravitation. Since this law is fixed and unalterable it was assumed that the material universe represents a closed system and, once it had been set in motion, no changes in motion or momentum from the outside were possible. According to mechanistic science all phenomena were explained in terms of motion of matter. All phenomena dealing with such motion were believed to hold precedence over any concepts involving freedom. Thus freedom is assumed to involve absence of or incompleteness of scientific law. This was the general position of mechanistic science through the first quarter of the present century.

With the introduction of Heisenberg's uncertainty principle mechanistic theories were changed extensively. For a number of years many individuals had sought for ways to soften, or eliminate, the concept of strict or absolute determinism then prevalent. With Heisenberg's principle came many theories explaining freedom in terms of slight deviations shown to be always present in the action of atoms and molecules. It was believed that these small deviations might accumulate to a small degree and by a proper coordination they could, in many cases, account for the actions of man and animals.

However, after several decades it has become obvious that such explanations are untenable. The minute deviations always present are incompatible with the large-scale actions of man and animals and cannot be combined and coordinated with them into a causal system for freedom of action.¹

WITH the failure of these theories many, who because of them had placed faith in freedom, have swung to the opposite extreme, namely, general determinism. Thus for many individuals, refutation of mechanistic science has become more difficult than ever before. There is no need for mechanistic science to defend absolute determinism and any freedom present seems too slight to be of practical importance. Thus, when individuals are engaged in general behavior, it is believed they are obeying irresistible laws, but the net result for them is a feeling that they are exercising free will.

Scientific developments in recent years have not all favored deterministic science. Final evaluation of Heisenberg's uncertainty principle has not yet been made but it has altered greatly the simple faith with which absolute determinism once was followed.

Various factors have entered which, from the mechanistic viewpoint, have clouded the picture. There are different levels of science which are relatively autonomous,² being in a sense, independent of other levels of science. There is a macro-level consisting of objects as we experience them, the existence of which is independent of the individual actions of the atoms of which they are composed. Also, there is a sub-atomic level consisting of mesons, neutrinos and many other sub-atomic particles. Here as before, the various levels are relatively autonomous. Such facts are very difficult for deterministic science to fit into its conventional explanations.

When we consider the macro-level with its objects of our experience, we note that science should reign supreme over this class of phenomena since its behavior would seem to be strictly determined within the limits of Heisenberg's uncertainty principle. This is, of course, true as far as is indicated by physical science alone. But there is a valid possibility which physical science has ignored and which must be investigated fully. This involves

the specific study of free actions which we see constantly about us.

We can see here a possible solution to the old freedom-versus-determinism dilemma which has plagued us for many centuries, for the origin of the concept of rigid mechanistic determinism of nature is thrown into bold relief with an alternate explanation as a contrasting background. We have confused "control by unalterable scientific law" with "rigid control of material systems." That there is a very important difference between these concepts is proven by a simple consideration. Even though the universe is controlled by unalterable scientific law it is not rigid like a typical machine, but flexible. The degree of this flexibility is almost infinite and is not limited by Heisenberg's uncertainty principle. The most obvious limitations to flexibility are friction and collision between parts. Thus when free actions are applied to a typical machine or material system, we have blending of forces, i.e., summation of vectors, and no scientific laws are broken. Volumes of such activities are available for consideration, comprising the whole history of natural activities. Thus it is obvious that freedom is not incompatible with science.

Mechanistic science has long believed that it presents a solid front against the entrance of any concept involving freedom. Thus it is generally held that in any field covered by well-defined scientific laws no concepts or processes involving freedom can operate without breaking one or more of the scientific laws. But this is false as we have shown. Because of the flexibility of the universe there is no solid front against non-mechanistic concepts and thus the laws of biology and psychology have a definite limited range for operation without interference from physical science. To determine the extent and nature of this region of flexibility we want to note briefly the general nature of these laws and show their significance for world events.

This region of flexibility involves the laws dealing with complex mental activity and also movement of objects. Mechanistic science has long refused to consider such matters, except in a very limited way, holding that in our present state of knowledge they cannot be dealt with profitably. Thus much important data from psychology is simply ignored by mechanistic science. But psychology is mature enough to stand on its own over an extensive range of phenomena. To refuse to explore fully such a well-developed and important class of phenomena is far from satisfactory. Such an attitude ignores the realities of life and focuses on a false system which has little relation to life.

OF equal significance for life is the physiological control of life processes. There are innumerable examples of such control to consider. This

class of action in general involves control of most internal conditions in the bodies of animals,³ and in a very limited way, in the bodies of plants. These include temperature regulation and chemical control of blood and other vital fluids. They also include digestion of food to obtain energy and to obtain simple substances for resynthesis into complex compounds for immediate use or for storage for future use. Such materials are used for embryonic growth and development and for repair of normal breakdown of body parts in the physiological actions of the body and to keep it in a normal state of repair during the life of the body.

It cannot be too strongly stressed that these are not merely complex static structures but are dynamic structures with substances constantly entering and leaving the structure. It often involves dynamically maintained differences in concentrations in fluids in regions not separated by static membranes. This is fundamentally more complex than any static structure and requires a more profound type of explanation.

These actions go beyond ordinary chemical equilibria since they often involve building up a very high concentration of many substances. To do this they must go in the opposite direction expected from a purely chemical standpoint, i.e., opposite that in which normal diffusion would cause them to go. This involves an "anti-diffusion" factor which requires energy to accomplish this result. How energy is applied to reverse chemical actions to obtain the fine structures produced by life processes is, of course, not known but such processes are universal in living systems.⁴ Such tendencies disappear with the death of the individual and the disintegration of its body.

There are no adequate chemical or physical reasons for this control of life processes. There are no chemical or physical reasons why a "unit" of "living matter" should react to increase its well-being or continue its individual existence or why its internal conditions should be maintained constant.^{5,6} Explanations of these actions are to be found in biological science exclusively, i.e., in such concepts as the "survival of the fittest." They have no counterpart in physical science. The fact that such actions are universal with life and have been so for hundreds of millions of years cannot but have very great significance for life.

Thus we see that the autonomy of biological sciences extends from complex mental activities to simple movements of objects to control of complex chemical actions. It is not limited as mechanistic science has held it to be. Thus science is seen to be compatible with freedom contrary to the contentions of mechanistic science and the communists.

The conclusions presented here are in agreement with the viewpoints of traditional philosophy. It has never succumbed to the tendency to

base freedom on indeterminism or absence of scientific law.⁷ It has concluded that concepts involving freedom have their reality independent of any restrictions imposed by scientific law. The significance of these facts is obvious. From many ancient and modern sources come verification that freedom is a reality. If we continue to ignore such facts our viewpoints of life will be as completely one-sided as are those of communism.

To accomplish the major tasks of preserving our values and gaining assent to them from other peoples of the world, we must bring to bear all the forces we can command. Many feel that it is illogical to bring forward in this issue our sentiment for freedom, since feelings only complicate and obscure the problem. We must stick to the facts, but not prejudge the situation in determining what the facts are. It is true that if the facts are as mechanist science assumes them to be, nothing can save the free world from being engulfed by communism, for it will seem to have truth on its side. On the other hand, if science and philosophy both uphold freedom, ours will be the final victory. There is enough evidence on hand to indicate that there is a strong probability, if not as yet certainty, that freedom is a reality within the frame of natural law. The only logical course now is to pursue this evidence as ardently and thoroughly as may be, in order to substantiate it further. The free world gives to all the potentiality to achieve any desirable goal. Surely this search for validation of our belief in freedom is the goal most to be desired, and should therefore be central to our scientific efforts.

Such a new movement, with the backing of science, could sweep the world.

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RELIGION IN THE PUBLIC SCHOOLS

J. D. McAulay

Is the Traditional American Attitude Toward This Problem Serving the Best Interests of Our Youth?

IF it is true that one half of the children of this nation, now in school, are receiving no opportunity to receive spiritual instruction or a religious education¹ and if it is assumed that the good and full civilized life is not possible without religious experience, then the public schools of this nation are sadly lacking in responsibility in not assuring the coming generation of this nation such experience.

Although the increase in Sunday School enrollment, in recent years, has been encouraging (in 1956, 23 percent of the U. S. population were enrolled as pupils in Sunday Schools, as compared to 17.1 percent in 1906²), there are now more people outside the Sunday Schools than ever before. Rufus M. Jones reports³ that there are whole townships in all parts of America in which there is no form of organized religion and where no adequate effort is made to interpret spiritual life to the children born within the area.

Western civilization has always considered the Christian religion as its most precious cultural treasure. The laws and literature, the institutions and morals of the West rest, supposedly, on religious principles. Historians have indicated that democracy itself stems from Christian foundations. To be "of the West" one should know and understand its Jewish-Christian heritage, and to be a true citizen of the West one should be grounded in this tradition.

In this complicated age of automation and space travel one must be educated to survive. But man cannot live by education alone. Education, in the sense of knowing and understanding Western traditions, does not answer the basic problem of man's present essential need, determining a goal and purpose for himself and his society in a materially dominated culture. Education in itself does not have a sufficient answer to the problems

of modern society. An educated criminal is still a criminal. Indeed he may be more fiendishly clever than he was before he received his education. It is possible to educate without religion, but will it be the type of education that will perpetuate a democracy? Children must manage somehow to come by some common body of ideals such as truth, goodness, justice, honesty, duty and a host of other ingredients that constitute the spiritual and cultural heritage of Western civilization. The most certain path to the securing of such ideals would be through religious education and experience.

Religion affirms overwhelmingly a reality that transcends the flux of events and constrains men toward the true and the good.⁴ But religion also is a matter of personal experience of the unseen and a personal acceptance of divine sanctions of conduct. Religious experience is concerned with the deepening of that sense of Heaven which lies about us in our infancy and also with the translation into the categories of eternal life of those great moments of joy and pain, of temptation and victory, of insight and despair which come to us in our passage through the world. The form with which these experiences are clothed, their explanation in the light of the Bible or the lives of the saints is a religious experience. The root of such an experience is feeling—not an emotional excitement but rather a deep sense of personal concern with the unseen world. It brings a person in touch with the world of the spirit and whether at the primitive stage when religion is a worship of mysterious natural agents such as the sky and the thunder or at the advanced stage of contemplation in the Eucharist or in meditation upon the Scripture there is always this sense of otherness. Knowledge of God comes by feeling and intuition. Knowledge about God is a matter of study and instruction. One complements the other. Without knowledge of God religious experience be-

¹ Ciarlantini, Linu A. *The Liberty of the School and Family Education*. Educ. Publishers, New York 12, N. Y. p. 8.

² Spaulding, Helen F. "Trends in Religious Education Statistics." *Religious Education*. Vol. LIII, 1958, p. 30.

³ Moehlman *The Church as Educator* Hinds Hayden Eldridge, p. 124.

⁴ American Council of Education "Committee on Religion and Education. *The Relation of Religion to Public Education Basic Principles*." NEA Publication, p. 11.

comes mere speculation or antiquarianism.

Thus a civilized man has a fuller, richer, life, if he has achieved knowledge of God as well as knowledge about God. Religious knowledge fulfills religious experience. In our society a person who has experienced religion and secured knowledge of that experience is a more civilized citizen—and has reached more completely the goal of a good life than a person who has not experienced religion or secured knowledge of that experience. If the factor of religion then is such an important one for achieving the good life, the child must have an opportunity to become aware of it and familiar with it as part of his broad personal development. This opportunity can be assured to every American child only through the public school.

THE change from a religious to a secular school system in America during the latter half of the 19th century occurred not because Americans abandoned religion but because of the complications which arose from teaching conflicting religious beliefs in the schools. As an inheritance from the old world and the colonial tradition, Americans in the early national period believed that religion belonged in public life and in public education as a preparation for life. Hence from 1776 to 1827 instruction in doctrinal religion which had been given in colonial elementary schools continued to be taught, although to a slowly diminishing degree in elementary schools maintained by civic funds in the states which had been the 13 colonies.

In 1827 a Massachusetts statute forbade the use of sectarian text books in common schools. This law, which was not passed as a negation of the "social tradition" that "religion belonged," marked the start of a "legal tradition" in education looking toward religious liberty. Between 1827 and 1861 three other states among the former colonies passed similar laws. Sporadically in the 1840 and 1850 decades the claim was made that religious instruction as such did not belong in Public Education.

In trying to live up to both the social and legal traditions mentioned, Americans created for themselves a dilemma. In the attempt to resolve the dilemma they eliminated all religious instruction except "morals" or "ethics," Bible reading and occasional prayers.

The struggle over sectarianism was the chief direct cause of the decline of religious instruction between 1827 and 1861. It did not result from the hostility to religion as such, from a concept of absolute church-state separation, or directly from the centralizing of power in state hands as opposed to district control.⁵ Religion was taken out of the schools simply because the churches could not

agree on "what" religion should be taught.

Today religious education is prohibited in the schools of 12 states, required in 12 states, and permitted in 24 states and the District of Columbia.

But in early American life there was less variation among families than now—at least concerning the relative status of parents or their responsibility for giving their children a religious heritage. Moreover the pattern of relationship within particular families was less likely to change because of change in community economic structure. Hence example from the family in which one grew up or informal comment from adults reared in similar families was more adequate than today for teaching youth the basic principles of our Christian heritage.⁶ Too, in the pioneer days of this nation the church was the center of the community. It was the cohesive force which molded and strengthened the moral fibres of the community. The minister or priest was indeed the shepherd of his flock. He admonished and protected, succored and taught the members of his community. He was the judge of right and wrong. He interpreted God to his people, and determined their religious experiences. Today the Church is quite a secondary institution in the majority of American communities, the minister or priest has lost his robes of authority and fewer turn to him or his church for knowledge of God or religious experience.

Thus when religious education was separated from the public schools during the latter half of the 19th century, it was firmly believed by thinking men of the day that the home and the church were adequate institutions in giving the child religious knowledge and experience. Today the home and church are not adequate for this grave responsibility. But the need for giving our children their Christian heritage is greater than ever. This need is becoming a grave and great social problem.

WHEN the American social order faces any problem or need the solution or satisfaction evolves through several steps or processes.⁷ In the case of religious instruction an attempt has been made to solve the problem through private benevolence of church charity, sometimes aided by small grants of public funds. This step in the evolutionary solution of the problem materializes in the form of volunteer Bible instructors who visit the school periodically and receive small public donations to purchase Bible verse scripts or New Testament prizes, etc. The second evolutionary

⁵ Abstract, Doctoral Dissertation by Dunn, William K. The Decline of the teaching of Religion in the American Public Elementary School in the States, originally the 13 colonies 1776-1861. Ph.D. John Hopkins Univ., Baltimore, Md. 1956, 461 pp.

⁶ Punke, H. "The Family and Juvenile Delinquency" *Peabody Journal of Education*, Sept. '55, p. 99.

⁷ Cubberly, Ellwood P. *Public Education in the U. S.* Houghton Mifflin, p. 118.

step is permission granted to local schools by a centralized authority to give released school time for religious instruction by particular denominations. The third step is to allow, if desired, some form of religious experience, such as Bible reading or the repeating of the Lord's Prayer to be conducted within the classroom by an authorized educational authority—such as the teacher. And the final step in the evolutionary solution of the problem of religious instruction and experience for our children is a law requiring a certain time for religious instruction within the classroom from a prepared and adopted syllabi. There are many variations in the evolutionary process of solution to be found in communities and states of this nation. It may be only a matter of time before every school system has a legal requirement for religious instruction within the classroom.

But the method of solution for the problem of religious instruction in the schools is not for a particular group to decide. The method cannot be settled quickly nor can it be settled once and for all. If the schools are for the people then such a controversial issue should be amply discussed by all groups in a given locality and conclusions which are at least temporarily acceptable to all should be reached. This places all parties imbued with diverse solutions in the position of being willing to sit down in a group consisting of representatives of all faiths and representatives of those who have no faith for the purpose of reaching some common solution. This is democratic group thinking and action as it should be. This method is superior to the attempt to put the "bee" on the board of education or the school superintendent and having either respond to the most vocal or forceful minority of the school community. No true proponent of the democratic process can refuse to partake of this procedure.⁸

⁸ Forster R. R. "Should Religion be Taught in the Public Schools." *Social Studies* 49, June '58, p. 19.

The British Government realized the need for religious instruction in its state schools with the Nazi bombing experiences of the Second World War. Children under the stress and strain of such a holocaust must have religious knowledge to give them belief, fortitude and wholeness. Thus in the Education Act of 1944 the British Government instructed each local education authority either to prepare a syllabus of religious instruction, by ad hoc committee set up by the local authority for this purpose, or alternatively to agree in committee to adopt as its agreed syllabus that prepared by some local authority. The composition of these committees must reflect representation of all the denominations to be found in its area. The Government gave the local authorities five years to secure such a syllabus for religious instruction. The best of such syllabi (and they are excellent) are the Cambridgeshire syllabus, the Sutherland and the Surrey. It is possible then for a community, through the democratic process, to achieve agreement on what will be taught in religious education for the public school.

Thus if religious knowledge and experience are required for the civilized man of the West and essential for the good life, the public school can and must be responsible for legally implementing, and democratically determining, how and what shall be the content of religious instruction for American boys and girls.

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SOURCE READINGS: INTEGRATIVE MATERIALS AND METHODS

Stellar Study and Speculation

NOW that fear and hatred have abated somewhat as driving forces in public policy, freer communication of the thought of Soviet scientists is opening up for the general public. What has long been evident to American scientists will now be more widely appreciated, namely, that as philosophers of physics (at least) and to some extent of man, Russian scientists welcome the most daring ideas.

The *New York Times* (October 4, 1959) reports the current Russian interpretation of the Tungus explosion of 1908. (It seems to have been a fireball of immense charge, which exploded above the ground, and left the region charged radioactively. Some 40,000 tons of inter-planetary matter leveled everything in an area of some 800 square miles.) The findings of Dr. N. A. Kozyrev suggesting that Jupiter and Saturn are heart-shaped, are also reported. (This has been deduced about the Earth by American scientists.) The third and most imaginative item concerns Mars and its two moons.

Dr. I. S. Sklovsky of the Institute of Physics of the Atmosphere, Soviet Academy of Sciences, has concluded studies of Phobos and Daimos, and draws conclusions from their smallness, the lowness of their orbits, and the fact that the orbital motion is slower than the rotation time of the planet, "a completely unique phenomenon in our solar system." He calculates that Phobos is hollow, and that both are possibly artificial satellites put up by intelligent creatures ages ago, when the water supply of Mars fell so low as to threaten their existence.

Education in Russia must be remarkably good if it combines first-class technical competence with such well-directed but bold thinking.

—F. L. Kunz

Plant-Life on Mars

THERE has long been evidence pointing to the presence of vegetation on Mars. For decades, E. C. Slipher has taken photographs of Mars from Lowell Observatory which have shown seasonal variations in the intensity of the dark regions of the planet's surface. Not all of these changes have been systematic; in 1954 an area of 580,000 square

miles went newly dark. But this was in a region which had been undergoing development for many years.

Until recently there had not been a successful direct test for the presence of plants on Mars. A new series of tests, made during the oppositions in 1956, and again in 1958, were conducted by Dr. William F. Sinton, a member of the staff of Lowell Observatory at Flagstaff, Arizona. The tests and their results are fully described in an article appearing in *Science* for November 6, 1959. Some significant passages are quoted herewith:

"Using the 61-inch telescope of the Harvard College Observatory during the 1956 opposition, I made a new test for the presence of organic molecules on Mars. Organic molecules possess strong absorption bands at 3.5 microns as a result of the resonance of their carbon-hydrogen bonds. It was found that in the plants tested this band was double, most likely as a result of interaction between a pair of hydrogen atoms attached to the same carbon atom, as occurs in paraffin molecules.

"The results of the 1956 observations indicated the presence of the band in the light reflected from Mars, but they left some doubt about the reality of the absorption. . . . At the 1958 opposition the test was made again with improved equipment, and the reality and distribution of the band were established."

The infrared light reflected from Mars was analyzed spectrally with a monochromator. A new liquid-nitrogen-cooled lead sulfide detector cell, specially custom-made, brought about a great increase in sensitivity. A better condensing optical system was used in the 1958 tests, further reducing loss of light produced by aberrations.

Observations were also made with the large 200-inch Hale telescope. Operating time of all large telescopes must be strictly rationed; not all periods of the night provide "good seeing" for specific uses. Observations of the most distant nebulae, for example, can best be made during the dark of the moon—all other sky conditions also being favorable—and hence nebular observations are seldom made during periods of bright moonlight. The Mars observations were made, therefore, during periods when strong incidental light in the sky made nebular observation unprofitable. The author writes:

"Through the courtesy of the Mount Wilson and Palomar Observatories, the 200-inch Hale telescope was made available during morning twilight hours for 2 weeks near new moon in October. The coudé focus was employed because its use would cause a minimum of interference to the

scheduled observer at the prime focus. Conversion of the telescope from prime focus to coudé may be made in 10 minutes. With these technical improvements investigations of different areas of the disk were made with approximately 10 times the sensitivity achieved in 1956. . . .

"Spectra were obtained on 13 mornings in the period 7 to 21 October and also during the first half of the night of the 21st, when strong moonlight prevented observations of nebulae with the telescope. . . .

Thirty-two spectra were obtained of various regions of Mars, and five spectra of the region of Syrtis Major. These spectra included only the wavelengths 2.7 to 3.8 microns, or 3.1 to 3.8 microns. The article reproduces a spectrum obtained with 1-mm slits that traversed the region of Syrtis Major. This spectrum shows absorptions produced by water vapor and methane in earth's atmosphere, through which the reflected light from Mars had to pass before reaching the observer. However, the spectrum also shows additional absorptions at 3.43, 3.56, and 3.67 microns which appear to be peculiar to the dark regions of Mars. In general the band studied was found to be present in four mostly dark regions centered on Syrtis Major, Pandora Fretum, Mars Sirenum, and Mare Cimmerium. It was absent or weak in the bright regions surrounding Arabia and Amazonis. "From this we conclude," writes the author, "that the absorbing material is on the surface and that it is associated with the dark regions."

The article reports that no new absorptions, other than those of the organic bands, were found on Mars. Certain N_2O and CH_4 bands were found to be no stronger in Mars spectra than in solar spectra. The presence or absence of these gases, and also of oxygen, is important to the question of biological life on Mars. On earth nitrous oxide is produced by soil bacteria, and methane is a product of decaying organic matter; oxygen is produced by photosynthesis which uses a chlorophyll catalyst. However, there are significant differences between the surface conditions of Earth and Mars; and we may only conjecture how differently organic life on Mars might adapt to these differences of environment. The presence of the bands near 3.5 microns has been confirmed, however. Carbonates also possess bands near this region, but it is most probable that organic molecules are responsible for the bands in Mars' spectrum, for the observed spectrum fits very closely that of organic compounds and particularly that of plants.

In concluding the article, Dr. Sinton writes: "It is tempting to assume, though this has not been demonstrated, that the dark regions that have appeared during the history of planetary observing also contain organic molecules. If this is true, then organic molecules are produced in localized re-

gions in relatively short spans of time. Growth of vegetation certainly seems to be the most logical explanation for the appearance of organic molecules."

One of the observed bands, at 3.67 microns, seemed to present an enigma, since it had not yet been found in any terrestrial plants. Dr. Sinton mentions one possible solution of the enigma: "However, it has now been found in the alga *Cladophora*. It is apparently produced by carbohydrate molecules present in the plant. . . . Thus the evidence points not only to organic molecules but to carbohydrates as well. The strength of the band at 3.67 microns compared to its weakness or absence in plants may indicate a significant difference in plants that may be present on Mars and perhaps indicate a larger storage of food."

—Alan Mannion

Food for Thought

B RITISH Glues and Chemicals, Limited, announced in London (*New York Times*, September 11, 1959 and *Time*, September 28, 1959) the development of a machine perfected during the past seven years. The whole pioneer effort cost only \$84,000. The designer is Mr. Israel H. Chayten.

The machine converts grass, peanuts or any vegetable matter directly into proteins and valuable oils, fibers and other by-products suited to human use.

Grass is indigestible for humans, but the machine breaks down the cells by shock waves transmitted in slightly alkaline water.

The protein comes from the machine in the form of powder which has no odor or taste. Two ounces would be about sufficient daily dietary need for an adult.

The pilot plant can process about a ton of vegetable matter in an hour. In terms of cost to the consumer it might be a few pennies a week, per person. The cost would fall as the by-products find uses.

Dr. R. G. Tristram, a director of research for Glues and Chemicals, estimates that the machine is ten times as efficient as a cow is in producing milk proteins.

The new development will be important in India and elsewhere to vast undernourished populations accustomed mainly to vegetarian diets, often too low in protein. Thus it constitutes a potential revolution of the world's food organizations, commercial, governmental and international.

—F. L. Kunz

Speed Words

IN the Fall 1959 quarterly issue of *American Documentation*, Gordon Alexander Speedie has written an article on "Speed Words," in which he suggests that the flow of information through the printed word may be analyzed in much the same way as the flow of electricity. He makes an analogy between the dialectic field wherein ideas produce psychomotive force and the magnetic field wherein electromotive force is transmitted. The article is intended to formulate a conjecture which might be the subject of investigation.

The author defines a speed word as one which produces understanding in the least possible time. He intends, by this term, something more than the commonplace idea that short words invoke meaning more quickly than long ones. He rather proposes to discover the pattern of understanding which different words produce, by scientific analogy and experiment. Using the term "meaning time" to signify the rate at which words convey understanding, the author aims to introduce the time dimension. By recognizing common terms "for both systems, the potential of electromotive force called volt . . . could be one form of a common force called meaning, expressed in a short time interval. . . . In the dialectic system, psychomotive force, called meaning time, could be another form of the same force of meaning, expressed in longer time intervals. In this form it might be described as thought force or emotion."

Mr. Speedie compares the flow of current to the flow of thought, and discusses the resistance encountered in both systems. He seeks to express the relationships in the dialectic field mathematically, basing his method upon analogy. The laws of an electric system work when in a circuit: the dialectic system may depend upon parallel laws, if terms are rightly selected. Thus, in the electric field, 1. amperes (flow of current) equal volts ("meaning time") divided by resistance; and 2. watts output (power consumed) equals volts ("meaning time") multiplied by amperes (flow of current). In the dialectic field this can be transformed as follows: 1. word frequency (flow of thought) equals "meaning time" divided by the resistance of the circuit (audience experience) and 2. word speed (thought consumed-understanding) equals "meaning time" multiplied by word frequency (flow of thought). In this case, word frequency is defined as the number of occurrences of a word per million words used by a stated audience, the average time per word for a million words being the equivalent of a time value. "Meaning time" is the actual time interval since a new form of meaning for a word began. Audience resistance uses the individual as a unit: one person using a word once a year has a resistance of one; twice a year, one-half, and so on.

Using these terms as factors, Mr. Speedie measures the speed of words with the equation:

$$WS = MT \times WF$$

where WS is the relative speed of a word in terms of its understandability, MT is the meaning time in years of word use, and WF is the word frequency per million words used by a stated audience. (For the latter figure, the author cites as reference the indexes in *The Teachers Word Book*, by Thorndike and Lorge.)

Use of this method experimentally has brought Mr. Speedie to several conclusions: Certain words, such as father and water, are basically the same in many languages; the same thing is true of numbers. Also, as W. L. White has pointed out, changes which take place during the history of a language are regular and consistent enough to permit comparisons so that the earlier stages of language may be reconstructed. Obviously, variations in word speed, as well as other factors, suggest that all meaning is relative, and that the most lasting expression of relative meaning would be basic family words, and numbers. From this it would appear that "there may be as much meaning in a few dozen stable words, of greater meaning age than numbers, as there is in the numerical relationships of a few dozen digits in the decimal system," which supply the basis of the universal language of science, mathematics. In this way, the relative importance of many languages could be assessed, and the changing form of an even more basic or universal language might be revealed.

Obviously, a study of this kind has implications so far as communication and motivational research are concerned. Additional experiments may lead to a recognition that motivations hidden in the changing use of words are automated. As for communication, no matter how large and supple a vocabulary a writer may possess, he can communicate no better picture of his subject than his audience can understand. A scientific analysis of word speed could assist such a writer in choosing language whereby his audience would grasp his essential ideas most rapidly, yet it would allow him to retain his own style through flexibility of phrasing and imagery. At the same time, speed words might help to solve interdisciplinary problems, since they could lead to a more general acceptance of word usage to express scientific knowledge.

If the analogy can be pressed home, the author suggests, speed words would necessarily prove to be only part of a larger concept. This is that there may well be another non-material field which exerts governance upon action—a field of thought, above and yet related to known fields such as gravity, magnetism and electrostatics. If such a field were postulated and searched for a field constant and field units, language could, in a mean sense, become a field constant, and the relationship of ideas field units.

—S. J. Aylmer

NEWS AND NOTES

THE average high school graduate does not know who he is, where he is, or how he got there. He is lost in greater or less degree. By that I mean he feels little relation to the whole world in time and space, and only the most formal relation to his own country. He may 'succeed,' he may become a good, law-abiding citizen, he may produce other good, law-abiding citizens, and on the whole he may live a pleasant—that is, not painful—life. Yet during most of that life, and particularly after his fortieth year or so, he will feel vaguely disconnected, rootless, purposeless. Like the very plague he will shun any searching questions as to his own worth, his own identity. He will die after having lived a fractional life." These words occur in the lead-off article in the *Saturday Review*, September 12, 1959, wherein Mr. Clifton Fadiman describes his own relatively satisfactory experiences in formal education.

His own peace of mind Mr. Fadiman attributes to the basic public school education he got in New York City, circa 1920. In high school this was three or four years of English, German, French, history and mathematics; and one year each of civics, biology and physics. On this "I could erect any intellectual structure I fancied. . . . I feel at home in the world. I am at times scared but I can truthfully say I am not bewildered." His prescription for 1960, then, turns out to be what was provided to him forty years ago: basic education, so that the deeps the past offers—"Newton, Shakespeare, Lincoln"—will be known and seen to be more admirable than the current shallows where Mr. Fadiman places "Frank Sinatra, Jerry Lewis, and Pat Boone," leaving unmentioned the unmentionable Saturday Night Televiolence program of roller skaters, wrestlers, and gunmen.

Although the prescription seems good, is this not partly because the *practical* wage-earning world of the 1960's is much the same as in 1920? The vast majority of men still work hard—often amid boredom—in commonplace jobs, and are so exhausted nervously that family life and entertainment are all that are feasible for them. There is little occasion for study and reflection. If education is to induce in the majority not mere resignation but true philosophical interests then the economy is called upon to supply physical conditions and a livelihood sufficient for true security. It is hardly fair to ask education to do what the economy prevents. Now at last it appears that the abundance made possible by technology and mass production starting about 1920, which was dammed back by the economic smash-up of 1929,

and has been directed to military needs since 1940, may be used to win the required peace at home as well as afford help abroad. Total and universal disarmament will close off war as the cause for postponement of changes. War being out, we can reduce hours of labor drastically, release mothers needed at home from business and industry, and generally speaking do what we ought to do and can do to put an end to both the fact and the feeling of basic insecurity which was there in 1920 and is still with us, on the eve of 1960.

In that new context basic education will have new meaning, provided we realize that rationalization of the economy means spending on education not only at the proper scale but explicitly for a purpose rather novel to the school, namely, to make life meaningful. This can be done by using the now available wealth of meanings so that education will deliver what is needed to get the new peace of mind, just as we must use the new peace, and the new automation, and the new chemistry to get the new leisure, together with basic security, which are the economic prerequisites. The school motto by 2000 A.D. might well be, paraphrased from DuPont: "Better thinking for wiser living, through philosophy." The process suited to securing the world of new meanings is just as readily specified for the schools as the social and economic imperatives now can be for the practical world. It may here be exemplified by reference to one crucial aspect.

IN 1960 education wrongly and needlessly separates religion and science. So long as we teach that science says that *only* the physically-sensed world exists, and religion says that some other states obtain beyond it, then a home-made philosophy has to make an uneasy compromise between knowledge and belief. As long as the school system is in this predicament it means that the child is taught to know one thing and to believe another. For many that dichotomy still seems necessary, and Mr. Fadiman may so hold, for he says of the Rockefeller report on education (published by Doubleday in 1958 and called "The Pursuit of Excellence") that it issued from faith. He quotes approvingly the following sentences from that report declaring explicitly that they "do not compromise a scientific conclusion." "What most people, young or old, want is not merely security or comfort or luxury—although they are glad enough to have these. They want meaning in their lives. If their era and their culture and their leaders do

not or cannot offer them great meanings, great objectives, great convictions, then they will settle for shallow or trivial meanings." But the neglected fact of our times is that science no longer sustains the opinion that only the sensed world exists. On the contrary it maintains as basic truth the view that the physical world behaves as it does for reasons which derive from a polydimensional and non-material nexus not available immediately through the senses except intuitively, but nevertheless demonstrable. So long as science aimed to describe all events in separate terms of ordinary space and time, the old dichotomy between knowledge and faith was inevitable, and Mr. Fadiman is not the only man who has had to live with it. But now that the sovereignty of valid knowledge has been extended significantly into the domain where only wonder, poetry, mysticism, and hope formerly could grope, a home-made philosophy of that precarious kind is not only inadequate, it is obsolete. Hence we are failing our youth.

At present for purposes of serenity and mental health the practical world is quite a bit more unsatisfactory than it was in 1920. But something worse goes on. We neglect the new meanings. Young people have somehow achieved enough insight from contemporary science to suspect that the non-material can now be shown to be real in physics, to start with. So they glimpse a light ahead. As yet we do not organize the contributions of Planck, Einstein, and Schrödinger so that they can be used in steady growth toward that light which (in plain fact) is all around them and us: the quantized radiation field. Instead we have been busy organizing all that knowledge to make television possible (and then for children and youth we broadcast mostly from the shallows and the muck), for rockets, and for bombs; and for years we have felt compelled to classify as secret many developments, and thus made the new meanings inaccessible to teachers.

Mr. Fadiman's prescription of a basic education (albeit with more science than in 1920) then is in general good, and in the interest of free men. A secular school system leaves to the individual the task of explaining himself to himself. This purpose it can serve, however, only if a special prior research task be performed for education. For by A.D. 2000 the adult (now a child in the first grade) will no longer need to live with the schizoid pressures between science and religion, provided meantime the work has been done which demonstrates the new compatibility between them, mentioned above.

The school system, then, must be afforded the materials which make the remarkable new relation between knowledge and belief clear. The preparation of the materials is the crucial new requirement, and this in turn is possible only if done by method. For industry the sciences operate

in scores, if not hundreds, of compartments, with only such degree of conceptual intercommunication as is necessary for technological applications. So long as the objective is physical competence, conceptual integration of the whole corpus of knowledge seems to be needless. Technology, being specialized, can get along with operationalism. But this will not serve the leisured security of 2000 A.D. and after. Delay in conceptualizing knowledge means that in a few years it will be an unmanageable jumble. Forty years hence most people will be insisting that they have time to think. If the research has meantime been done, no one will think of himself as living only in the space and time of common sense. Man will see himself then as a material apparition which has its roots in a polydimensional non-material reality, and this is a state of affairs totally different from the present curious compound of physicalism in space and aspirations in time: mortality now, and immortality (maybe) later. By then sensate physicalism will be in a state of decay as advanced as materialism is now. But if we do not soon begin to organize science for meaning instead of for technology, the task put upon the individual in A.D. 2000 will be impossible of performance.

Thus a clear choice is before us. We may formulate and use a publicly demonstrable methodology available to reunite the humanities and the sciences; or we may neglect this duty. Neglect leads to encyclopedism, and that in turn seems bound to end up in a kind of intellectual authoritarianism exercised, oddly enough, by people who are conspicuously devoted to political freedom! For if there is no method, then in the end *some* small group has to decide which items in the millions of facts and thousands of opinions are important for philosophy. Precisely this is being widely offered even now for that adult or continuing education which Mr. Fadiman so rightly looks to as the end-product of basic education. The studious adult is currently being offered 74 authors and scholars such as Homer, Plato, Dante, Shakespeare, St. Augustine, Milton, Machiavelli and St. Thomas Aquinas, in 54 volumes selected after 8 years of research by 75 scholars at a cost of over two million dollars, with the 102 great ideas predigested. We have quoted the advertisement almost verbatim. Even if we were to add 204 additional great ideas from 54 books of science and 54 great books of the Eastern world, and threw in the *Encyclopedia Britannica* free to everyone, as Mr. Fadiman used to do on "Information Please" for the few who could stump John Kieran, there would still be something lacking.

The Rockefeller report was most timely, eloquent, and heartening. By insisting on the need to supply great meaning and great purpose it put philosophy at the center. We may say it was addressed to the goal, not to the technical means of

achievement. It is important to recall that it was not only otherwise comprehensive and penetrating, but that it was prepared by a panel under the chairmanship of the president of the Carnegie Corporation. It thus brings together two of the oldest and most respected names in modern philanthropy. We take this to be a sign of active concern and a sense of joint responsibility; a good augury that the schools in this country and the world at large will get the materials they need to discharge their new responsibility.

—F. L. Kunz

It is, of course, established that a new tradition entered India with the coming of the Aryans, but the relationship between this impulse and the indigenous inhabitants in those remote times is too complex to be made clear after all these centuries have passed. There is, however, much that can be done through the language and the literature to show the significance of pre-Aryan contributions. In the North, the indigenous cultures are inextricably mixed with the Aryan, but in the South, the group of languages usually called the Dravidian have retained a remarkably dynamic literature. Of all these languages, Telugu, Malayalam, Kannada and Tamil, the latter is by far the richest linguistically. It is, at the same time, the purest representative of the pre-Aryan period.

The *Kural* is the central work of Tamil arts and letters, its status corresponding somewhat to the *Dhammapadam* in Buddhism. It is not easy for some-

one who comes at the *Kural* from outside the total framework of Tamil culture to appreciate it adequately; nevertheless its importance must be recognized, since it has been the handbook of ethics for millions of South Indians through the ages. Since it is so little known in the West, we welcome the opportunity to publish Mr. Thiagaraj's analysis in this issue.

The policy of this journal provides, of course, for the freest possible interpretation of issues in the present philosophy of nature. For example, readers of the present number of MAIN CURRENTS will notice two different uses of such an issue: the matter of uncertainty which Heisenberg proposed as a principle, in contrast with its status as merely a description of the present state of affairs in knowledge. Accepting his view, many writers have seized upon it as proof that freedom is imbedded in nature and that *everything* is a question of probability; hence human freedom of choice stems from such origins instead of from knowledge of and use of natural law. Matters such as uncertainty, complementarity, parity and the like are far from being settled, therefore whatever may be the origins and true nature of freedom, writers in MAIN CURRENTS have an ample supply! For those who would like to examine a recent close scrutiny of uncertainty and like problems as they stand today, pages 210 to 248 of *Metascientific Queries*, by Professor Mario Bunge (reviewed on page 47) may be of assistance.

REVIEWS

Totum in Quantum

THE *Phenomenon of Man* is the incomparable record of a lifetime of reflection about the evolution of consciousness by the geologist and biologist, Father Pierre Teilhard de Chardin, posthumously published (Harpers, New York, 1959; 311 pages, and index, \$5). The content and the introduction by Sir Julian Huxley show, and testimonials of respect and affection on the jacket by Arnold Toynbee, F. S. C. Northrop, Roy Chapman Andrews and others indicate, that although his Order (The Society of Jesus) would not permit Père Teilhard to issue this material during his lifetime, the author continued resolutely a catholic in respect to knowledge, and a Catholic as regards the belief, to the end. Thanks to the philos-

ophy appropriate to the science we have today, this is quite possible for a man of the author's stature, capable of seeing and stating the doctrine of Immanence in the phenomenon, and of Transcendence in the continuum.

His thesis is precisely that: Matter has an inner or life side (the Totum, he calls it) as well as an outer or particulate aspect (the Quantum). He says, "... the exterior world must inevitably be lined up at every point with an interior one" (page 72). He deals with the stuff of the universe briefly in Chapter I, his real objective being the evolution of (1) consciousness or responsive life and then (2) of reflective self-consciousness, the phenomenon of man. To say without recourse to inherited doctrines what must be said if these doctrines are to be justified calls for superb writing. It is provided. Moreover, the struggle to find

modern terms for very old ideas familiar to Buddhists and Hindus, and to classicists among Christian theologians (if they know their Plato) is registered in the remarkable translation by Bernard Wall, to whom English readers owe gratitude.

At a hundred points Father Teilhard might have given up the effort and had recourse to words inherited as beliefs. The reader who knows the standard works of East and West will be reading such terms into every page. But the beauty of the book is in just that: the case is stated so well, and so richly documented from biology and all else, that the perceptive reader is able to reap the profound pleasure of recognizing and naming as truths what he has formerly too often had to believe. Here love as the world-force, and beauty as its matrix, are fulfilled by knowledge, as reason elevates them to the Transcendent.

There are four books: *Before Life Came*; *Life*; *Thought*; *Survival*. The noble mind at work is moving from Alpha to Omega. The latter, as a point in Something, is then discussed in three chapters: The convergence of the person and the Omega point; Love as energy; The attributes of the Omega point. We cite a passage (pages 287-288) which is really the true conclusion, although an Epilogue, a Postscript, and an Appendix come after.

"We can entertain two almost contradictory suppositions about the physical and psychical state our planet will be in as it approaches maturation. According to the first hypothesis which expresses the hopes towards which we ought in any case to turn our efforts as to an ideal, evil on the earth at its final stage will be reduced to a minimum. Disease and hunger will be conquered by science and we will no longer need to fear them in any acute form. And, conquered by the sense of the earth and human sense, hatred and internecine struggles will have disappeared in the ever-warmer radiance of Omega. Some sort of unanimity will reign over the entire mass of the noosphere. The final convergence will take place in peace.¹ Such an outcome would of course conform most harmoniously with our theory.

"But there is another possibility. Obeying a law from which nothing in the past has ever been exempt, evil may go on growing alongside good, and it too may attain its paroxysm at the end in some specifically new form.

"There are no summits without abysses.

"Enormous powers will be liberated in mankind by the inner play of its cohesion: though it may be that this energy will still be employed discordantly tomorrow, as today and in the past. Are we to foresee a mechanizing synergy under brute force, or a synergy of sympathy? Are we to foresee man seeking to fulfill himself collectively upon himself, or personally on a greater than himself? Refusal or acceptance of Omega? A conflict may supervene. In that case the noosphere, in the course of and by virtue of the process which draws it together, will, when it has reached its point of unification, split into two zones each attracted to an opposite pole of adoration.

¹ Though at the same time—since a critical point is being approached—in extreme tension. There is nothing in common between this perspective and the old millenary dreams of a terrestrial paradise at the end of time.

Thought has never completely united upon itself here below. Universal love would only vivify and detach finally a fraction of the noosphere so as to consummate it—the part which decided to 'cross the threshold,' to get outside itself into the other. *Ramification once again, for the last time.*

"In this second hypothesis, which is more in conformity with traditional apocalyptic thinking, we may perhaps discern three curves around us rising up at one and the same time into the future: an inevitable reduction in the organic possibilities of the earth, an internal schism of consciousness ever increasingly divided on two opposite ideals of evolution, and positive attraction of the center of centers at the heart of those which turn towards it. And the earth would finish at the triple point at which, by a coincidence altogether in keeping with the ways of life, these three curves would meet and attain their maximum at the very same moment.

"The death of the materially exhausted planet; the split of the noosphere, divided on the form to be given to its unity; and simultaneously (endowing the event with all its significance and with all its value) the liberation of that percentage of the universe which, across time, space and evil, will have succeeded in laboriously synthesizing itself to the very end.

"Not an indefinite progress, which is a hypothesis contradicted by the convergent nature of noogenesis, but an ecstasy transcending the dimensions and the framework of the visible universe.

"Ecstasy in concord; or discord; but in either case by excess of interior tension: the only biological outcome proper to or conceivable for the phenomenon of man."

—F. L. Kunz

Space-Time as Reality: Two Books that Touch the Central Problem

This reviewer has long hoped to possess in one short volume the main considerations leading up, and applicable to the long-extended (and of course as yet unresolved) discussion of the relation of quantum theory to specific larger issues, especially the actuality of a four-dimensional realm. Without involving the reader in mathematical formulations, *Metascientific Queries*, by Dr. Mario Bunge, Professor of Philosophy of Science and Theoretical Physics, Buenos Aires University, does exactly that. (Published by Charles C. Thomas, Springfield, Illinois, 1959, in the American Lecture Series, edited by Marvin Farber, 278 pages and index, \$6.75.)

For those who consider themselves virtual illiterates with respect to the calculus of vectors, tensors, spinors, and the like, but are endowed with some intuitive appreciation of geometry and a drive to know, the value of this book can be appreciated by assessing the importance of the issue. It is no less than this:

(1) Are the principal phenomena that lead to quantum theory after all mainly evidences for wave mechanics, and therefore do not demand a status of supremacy for fields of force in nature? If this is the case, then treatment in terms of poly-dimensions is important only for operational reasons, and real space con-

tinues to be three-dimensional. (2) Or is there actually a hyper-dimensional domain in which objects, events and processes operating on a sub-atomic scale exist in an objective sense, independent of an observer? If (1) is the fact, then an electron is indeed nothing but a string of symbols, and mankind is left about where it was, philosophically, with respect to many great issues. For if the sense-experience domain is all that there is, then we are prisoners indeed, and aspirations have little foundation. If, on the other hand, electrons are real ingredients of a hyper-dimensional domain, even though all this is far beyond ordinary sense perception, then the long years which cramped man into a sense-perceived, rest-mass world are coming to an end.

Metascientific Queries specifies the reasons why the issues remain complex and unsettled; complementarity and the uncertainty doctrine are examples of the issues clearly expounded. The ever-increasingly successful appeal by physicists away from Hamiltonian formalism, in which time is an independent variable, to the more general Lagrangian formalism, in which all four co-ordinates (three of space and one of time) appear in a perfectly symmetrical way, seems to be the heart of the matter. And on this and related issues Professor Bunge has afforded the lay reader very real help.

Introduction to the Theory of Quantized Fields, by N. N. Bogoliubov and D. V. Shirkov develops the latter choice. (Interscience Publishers, Inc., New York, 1959, translated by G. M. Wolkoff, 713 pages and index, \$17.00.) The original appeared in 1957. The translation contains material not yet in the Russian edition. From this technical and recent work, it appears that the Lagrangian formalism, and all that it implies philosophically, is up to this date proving its superior utility.

The boundary of the atomic world is being pushed back steadily into the nucleus, to the very threshold of a real four-dimensional realm of matter (if it may be so called) without rest-mass. The physicists have established experimentally elementary lengths of the order of 10^{-14} cm, in the domain of the nucleon. The actual organization of the entire wave-structured, quite supersensory, yet objectively real world begins to be a possibility, and a non-local field theory a necessity and a reality. The Red Queen used to have to run fast, just to stay where she was. Presently we may be allowed—or even compelled—to accept the existence of a matrix without any obstacles to universal intercommunication, something like the panpsychism of the past, but now justified basically by physics.

The larger consequences of such orientation are sobering. Everyone can peaceably stay put, the universe being present to him, inwardly, and even knowable on certain terms. Those terms, and the appropriate life-habits by which what is larger may be reached, have long since been explained by those few known to us, by report, to have arrived at the Tao, or Nirvana. An odd business, this, the physicists demonstrating to the religionists themselves that there is after all a way out from "the shades of the prison house."

—F. L. Kunz

We have received and noted with interest a paperback book entitled *Asia and the Humanities*, which contains a series of papers presented at the Second Conference on Oriental-Western Literary and Cultural Relations, sponsored by Indiana University. (Horst Frenz, Ed., pub. by the Comparative Literature Committee, Indiana University, Bloomington, Ind., 232 pp.) The Conference addressed itself primarily to the problems of deepening cultural understanding as a basis for future relations between East and West, with emphasis on the fields of literature, philosophy and the arts. The range of the discussion is indicated by the fact that in addition to a number of papers on the development of East-West understanding through religion, the arts, philosophy, the press, and so on, there are specific studies of such subjects as "Buddhist Themes in Western Literature," and a "Classification of Indian Ragas."

We from time to time express our appreciation of the efforts being made by publishers of paperbacks to bring noteworthy titles to a wider public. We feel especially impelled, now, to note two recent issues of Dover Publications: *Foundations of Physics*, by Robert Bruce Lindsay and Henry Margenau (542 pp. and index, \$2.45) and *Studies on the Structure and Development of Vertebrates*, by Edwin S. Goodrich (2 vols., 837 pp. and index, illus., \$5.00). Both of these books bring a major work in the field within easy financial reach, while retaining the excellence of the original editions.

Books Recently Received

- The School as Agent for Cultural Renewal*, by Lawrence K. Frank. Harvard Univ. Press, 1959. \$1.50
Relativity for the Layman, James A. Coleman. Macmillan, (re-issued 1959). 124 pp., preface, index. \$3.50
Ethics and the Social Sciences, Leo R. Ward, C.S.C. Univ. of Notre Dame Press, 1959. \$3.25
History and Philosophy of Science, L. W. H. Hull. Longmans Green & Co., New York, 1959. \$5.00
How Children Learn to Speak, M. M. Lewis, with Introduction by A. D. Buchmueller. Basic Books, Inc. 1959. \$3.00
Power and Morality, P. A. Sorokin and W. A. Lunden. Porter Sargent, Boston, 1959. \$3.50
The Greek Experience, C. M. Bowra, Mentor, 1959, 224 pp., illus., 50¢
The Origins of Oriental Civilization, Walter A. Fairervis, Jr., Mentor, 1959, 200 pp. 50¢
A History of the Western World, L. J. Cheney, Mentor, 1959, 304 pp. 50¢
The March Up Country, Xenophon's *Anabasis*, tr. by W. H. D. Rouse, Mentor, 1959. 50¢